

# Original Research

## Questionnaire survey of California consumers' use and rating of sources of health care information including the Internet

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**ABSTRACT** ● **Objective** To understand how Californians use and rate various health information sources, including the Internet. ● **Research design** Computer-assisted telephone interviews through which surveys were conducted in English or Spanish. ● **Subjects** A household sample generated by random digit dialing. The sample included 1007 adults (18+), 407 (40%) of whom had access to the Internet. ● **Main outcome measures** Past health information sources used, their usefulness and ease of use; future health information sources, which are trusted and distrusted; and concerns about integrating the Internet into future health information seeking and health care behaviors. ● **Results** Physicians and health care providers are more trusted for information than any other source, including the Internet. Among those with Internet access, a minority use it to obtain health information, and a minority is "very likely" to use e-mail to communicate with medical professionals or their own doctors and nurses, to refill prescriptions, or to make doctor appointments. Also, most of those with Internet access are "unlikely" to make their medical records available via the Internet, even if securely protected. ● **Conclusions** The public, including frequent Internet users, has major concerns about the confidentiality of electronic medical records. Legislation may not assuage these fears and a long-term, open and collaborative process involving consumers and organizations from all the health care sectors may be needed for full public assurance.

### INTRODUCTION

Recent changes to the healthcare system include increased enrollment in managed care,<sup>1</sup> shorter visits with health care providers as services and costs are monitored,<sup>2</sup> and concerted efforts to move care from in-patient to out-patient settings.<sup>3,4</sup> These changes were occurring as the Internet was becoming a major channel for the sharing of information. These parallel developments have led to consumers taking more control of their own health care and the Internet becoming a major source for health information. Studies of health information source preferences are primarily conducted with specific patient groups<sup>5-10</sup> or as ways to improve specific source efficiency.<sup>11</sup> Proprietary information on consumer preferences is used to develop commercial web sites, but little public information is available.

The needs and behaviors of consumers surrounding health and health care information are frequently the subject of media articles,<sup>12-15</sup> and today's consumers are more informed and demanding as they take charge of their own health care.<sup>16,17</sup> An Institute for the Future report<sup>18</sup> describes the major forces pushing the Internet into health and health care as "strong" and "unstoppable." These forces include consumer demand, increasing consumer experience with e-commerce and e-mail, the ease of obtaining diverse health care information through the Internet, and the low-cost of disseminating information this way. Barriers to integrating the Internet into health and health care include concerns about privacy, weakness in browser

and search engine technologies, uncertainty about the quality of information, and lack of universal standards for communications and transactions. Despite these barriers, people are increasingly using the Internet to obtain health-related information.

One survey puts the number of websites related to health issues at more than 15,000<sup>19</sup> generating thousands of hits each day. America Online, as a portal to healthcare sites, reports 2 million users regularly visit its healthcare site.<sup>20</sup> Others report that in 1998 more than 17 million US adults searched on-line for health and medical information,<sup>19</sup> and in 1997, "43% of the 40.6 million adults in the United States who used the Internet were seeking health information." This number is projected to grow to 30 million a year by 2000.<sup>21</sup>

Physicians and health care providers have traditionally been responsible for both providing health information and maintaining the confidentiality of medical information, and two recent polls confirm that they are the most trusted sources of health information.<sup>15,23</sup> This consumer trust remains, despite projections that millions of Americans will use the Internet for health information and the recognition that the Internet can provide emotional support groups for those with specific conditions.<sup>16,21,22</sup>

This study sought to understand how Californians use and rate various health information sources. Its hypothesis is that California households with Internet access will display different characteristics from those without access.

## METHODS

The questionnaire was developed by the National Health Foundation and was reviewed by its Center for Health Information Technology Advisory Board. Survey questions centered on health information sources used during the past year, the usefulness and ease of using these sources, anticipated future sources, which sources are trusted, health information wanted, and demographics. Those respondents with Internet access were also asked about their willingness to integrate Internet use into future health-related activities.

Marketing Scientifically Inc. International administered the survey. The English language questionnaire was programmed into the company's computer-assisted telephone interviewing system that insures interviewing procedures and scripts are implemented identically to each respondent. After review and pre-testing, the questionnaire was translated into Spanish. The final questionnaire had 32 questions and took, on average, 20 minutes to complete. Each respondent chose to speak in English or Spanish during the interview. Household sampling was conducted using random digit dial methods from a database that excluded business, government, and university telephone numbers.

## RESULTS

Data were collected from a total of 1003 households during August 1998, with 407 households having Internet access. The maximum sampling error for percentages based on the entire sample ( $n=1003$ ) is  $\pm 3.2\%$ , and for the subsample ( $n=407$ ), is  $\pm 5\%$  at the 95% confidence level. The results are provided in four discrete areas: demographics; past health information sources, their usefulness and ease of use; future health information sources, which are trusted and distrusted; and the specific concerns of those with Internet access.

### Demographics

Respondents were mostly female (63%), age 25 to 44 years (39%), and white (61%), with a mean annual income of \$40,100. These data differ slightly from California demographics: females (50%), 25 to 44 year olds (47%), and whites (53%). Hispanics (sample 22%, statewide 28%) and Asian/Pacific Islanders (sample 6%, statewide 11%) were under-represented. Participants with Internet access were significantly more likely to be male and living in the suburbs and significantly less likely to be Hispanic, over 60 years old, and earning under \$50,000/year ( $p \geq .028$ ).

### Past health information sources

In the past year, 471 (47%) of the respondents had sought health information for themselves or their families. Those with Internet access (56%) and women (52%) were significantly more likely than those without access (41%)

and men (39%) to have sought information ( $p \geq .001$ ). Although those with Internet access were more likely to have sought health information than those without access, only 37% of them used the Internet in their searches.

Physicians and health care providers were consulted by 85% of the respondents and were the single most important source of health information for all groups regardless of gender, ethnicity/race, age, or annual income. They were also ranked the most useful sources by the overall sample (74%) and by those with Internet access (70%). The Internet was ranked as the fifth most useful by both the overall sample (10%) and those with Internet access (19%). Although physicians and health care providers were the most useful sources of health information, they were not universally seen as being easy to access. Less than two thirds (64%) of the overall sample reported them as the easiest or second easiest sources to use. Overall, the Internet ranked as the fifth easiest source to use while those with Internet access ranked it third (Table 1).

### Future health information and sources

Overall, 70% of respondents said they are most likely to consult their physicians and health care providers for information about medical conditions in the future. Those with Internet access, however, were significantly less likely to report using physicians and health care providers and more likely to report using the Internet ( $p = .0001$ ). A total of 78% of the overall sample and 75% of those with Internet access report that physicians and health care providers are their most trusted health information sources. Those with Internet access ranked the Internet third, it was ranked fifth overall. Both the overall sample and those with Internet access ranked the Internet as the fourth most distrusted source (Table 2).

### Issues for those with Internet access

A total of 407 (40%) people in the sample have access to the Internet from their homes (76%), offices (40%), schools (10%), and public access locations (4%). Over two-fifths (42%) go online everyday, although men (52%) are significantly more likely to do so than women (33%,  $p = .002$ ). Almost three-quarters (72%) use e-mail, again with significantly more men (80%) than women (66%) using it ( $p = .003$ ). Over one-half (56%) report having used the Internet to seek health information, but there are several concerns about further integrating it into their health care.

### E-mail with medical professionals and personal physicians/nurses

Less than one-third (30%) reported that they anticipate "often" (9%) using or "most likely" (21%) using e-mail to ask a medical professional specific health questions. Forty-six percent, however, report "often" (15%) or "most likely" (31%) using e-mail to communicate with their own

Table 1 *Health information sources used in the past year*

Health information sources used in past year	Sources used		Useful		Easy to use	
	All % (n = 1003)	Internet % (n = 407)	All % (n = 1003)	Internet % (n = 407)	All % (n = 1003)	Internet % (n = 407)
Physician/healthcare provider	85	83	74	70	64	55
Family member/friend	34	45	28	27	34	35
Telephone advice line	10	12	6	7	5	6
Employee assistance program	22	24	10	10	9	10
Newspaper/magazine/journal article	31	40	23	21	24	21
Advice book	32	36	18	20	20	22
Internet	19	37	10	19	13	24
Health fairs	10	8	3	1	9	1

doctors and nurses, with those persons going on-line every day most likely to report using this service "often" (20%).

#### Prescription refills and doctor appointments

When asked how likely they would be to use the Internet to order prescription refills and make doctors appointments, almost half (49%) anticipated "often" (18%) and "most likely" (31%) using this type of service.

#### Protected medical records

Respondents were more apprehensive about making their medical records available via the Internet than about using

e-mail to communicate with their healthcare providers. They remain apprehensive even if their records are protected through encryption or some other means and even if they frequently used the Internet. Two-fifths (40%) are "not likely" to use this type of service, with 31% reporting they would "often/most likely" use it.

#### Privacy and confidentiality

Respondents had major concerns about the privacy and confidentiality of medical information being available to medical professionals even via a secure Internet connection. Over one-fourth (27%) had serious concerns and 25% stated they would "never" agree to release their medi-

Table 2 *Future health information sources*

Health information sources anticipated to be consulted in the future	Most likely to consult		Most trusted		Most distrusted	
	All % (n = 1003)	Internet % (n = 407)	All % (n = 1003)	Internet % (n = 407)	All % (n = 1003)	Internet % (n = 407)
Physician/healthcare provider	70	63	78	75	4	5
Family member/friend	9	10	8	8	34	32
Telephone advice line	2	1	1	0	13	13
Employee assistance program	2	1	1	0	4	4
Newspaper/magazine/journal article	2	2	3	3	37	34
Advice book	6	8	3	5	4	3
Internet	5	13	2	5	11	12
Health fairs	1	1	1	0	6	6

cal records via the Internet, regardless of the security safeguards.

## CONCLUSIONS

For more substantive analyses, such surveys must be repeated so that trend analyses can be conducted. Nevertheless, some specific findings have implications for how medicine and technology seek to meet consumers' health information needs. First, people trust their physicians and health care providers more than any other information source. Second, only a minority of those with Internet access are likely to use e-mail to communicate with medical professionals or their own doctors and nurses, or to refill prescriptions or make doctor appointments. Third, most individuals with Internet access are unlikely to make their medical records available via the Internet, even if protected through encryption or some other means.

Although legislation defining who controls access to medical information and what punishments pertain to improperly using it is necessary, it is probably insufficient to fully assure the general public. Full assurance probably requires a long-term, open and collaborative process involving consumers and organizations from all the sectors of health care.

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## COMMENTARY

### Rejoice and help patients get the best from the World Wide Web

We should rejoice in the findings of Pennbridge et al, patients still trust their physicians to provide the most credible answers to health questions. And, the Lady's Home Journal is still a distant contender. The World Wide Web is somewhere in between. The increasing role of the World Wide Web in patient education and medicine has a number of implications and poses several quandaries.

Educated patients are more able to participate in their own care and most providers see this as a positive. For the provider, however, a knowledgeable patient can be per-

ceived as a two-edged sword. Patients with ready access to medical information are better prepared to question the care that we furnish. Have no doubt that patients may be more up to date on recent research than we are. Almost every illness has a presence on the web through a legitimate organization with an interest in keeping patients informed about recent developments.

This availability of information has several consequences. First, it is a good way to establish a dialogue with our patients. Some of the information on the web is misleading or incorrect, and patients may not be able to prop-

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